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EP 0380398 A1 EP 0145354 A2 US 5199761 A

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(54) Vehicle window assembly

(57) A vehicle window assembly comprises a vehicle door 10 defining a window aperture, a seal 38 surrounding the rear part of the aperture, and a pair of seals 40a, 40b surrounding the front part of the aperture, a division bar 22 extending across the aperture, and a quarterlight 24 and sliding pane 28 on opposite sides of the division bar each having one edge supported thereby. The division bar comprises a strip of elastomeric material 42 with a reinforcing insert 48 (Fig 5, not shown) and is supported at each end by the seals 38, 40a, 40b. During assembly the seals 38, 40a, 40b are joined together by over-moulding, the quarterlight 24 is inserted into the division bar 22, and the seal 38 is stretched around the quarterlight, the whole assembly then being mounted in the window aperture 12.

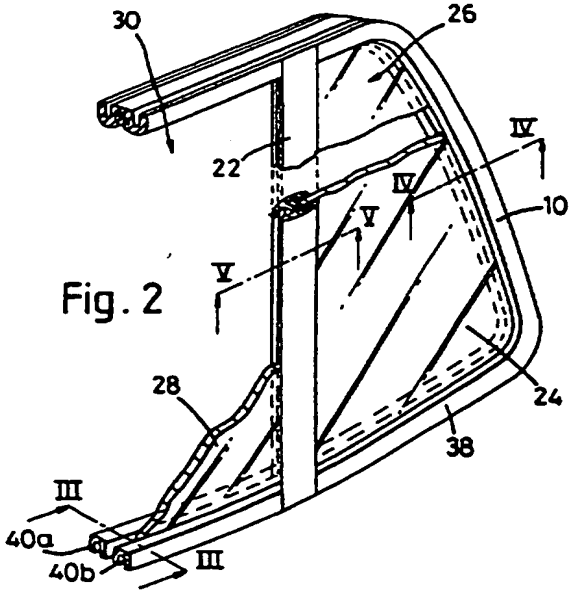

Fig. 2

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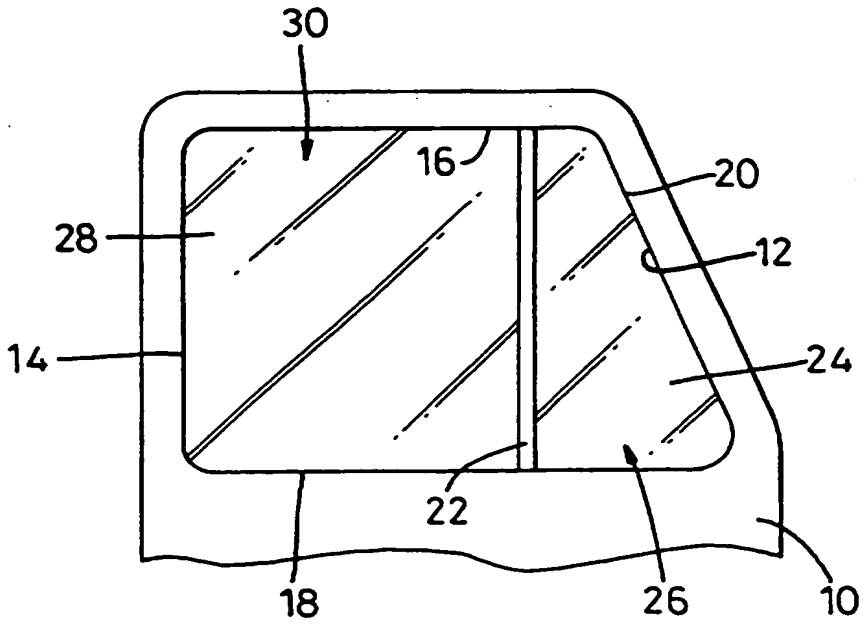
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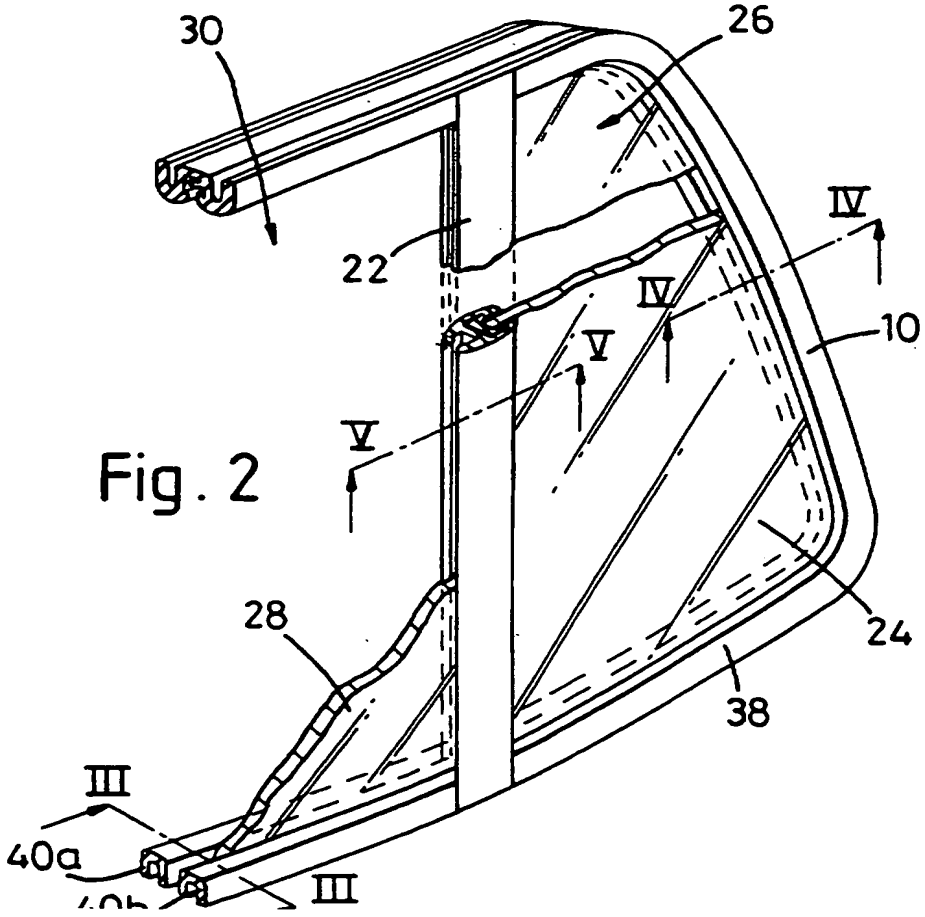
Fig. 1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38
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40a
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Fig. 2

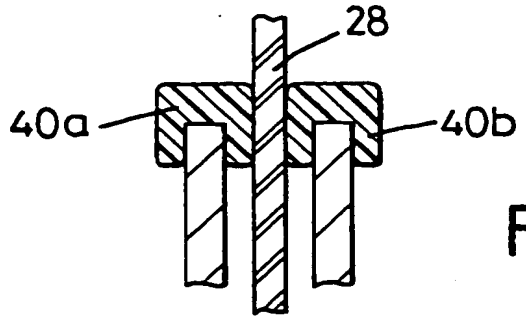

Fig. 3

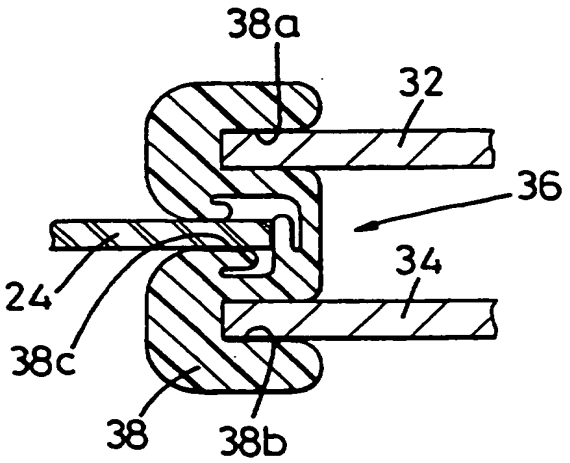

Fig. 4

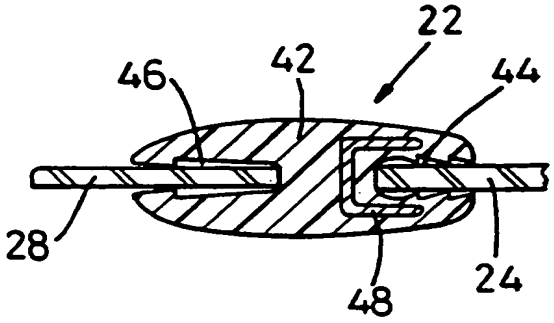

Fig. 5

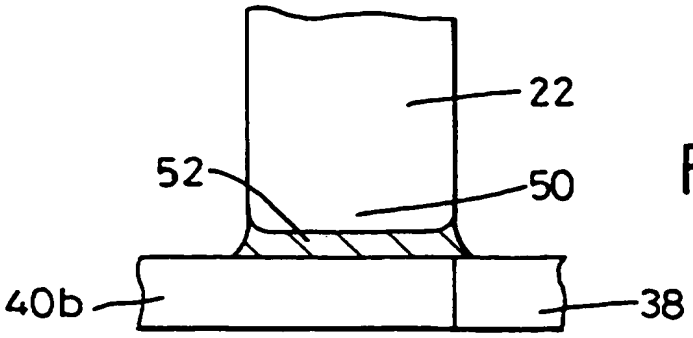

Fig. 6

Vehicle Window Assembly

The present invention relates to vehicle window assemblies, and in particular to the type of vehicle window assembly wherein an aperture in the vehicle body is divided by a division bar, with a pane of glass on each side of the division bar. This arrangement is particularly useful where the window aperture has a sloping front or rear edge, and can be divided into a rectangular and a triangular sections. The rectangular section can then be made to slide open easily.

Normally the division bar comprises a steel strip attached at the top and bottom to the vehicle body work by bolts or other conventional means. Normally the division bar extends downwards beyond the bottom of the window and is attached to the body work in two or more places below the window. A seal is provided around the edge of each part of the window.

It is known from EP 0 380 398 to provide a vehicle window assembly in which the seal around the window is made up of a number of short lengths joined together by moulding.

It is an aim of the present invention to provide an assembly which is cheaper and simpler to assemble.

Accordingly the present invention provides a method of assembling a window into a vehicle, the method comprising

the steps of: providing at least one length of sealing material and a division bar, the sealing material and the division bar each having a groove therein; attaching each end of the division bar to a respective connection point on the sealing material; inserting one edge of a window pane into the groove in the division bar; fitting the groove in the sealing material over the remaining edges of the pane; and mounting the sealing material and pane into a window aperture of a vehicle body.

Preferred embodiments of the present invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 is a schematic view of a window assembly according to the invention;

Figure 2 is a perspective view of the assembly of Figure 1;

Figure 3 is a section on line III - III of Figure 2;

Figure 4 is a section on line IV - IV of Figure 2;

Figure 5 is a section on line V - V of Figure 2; and

Figure 6 is an enlargement of part of Figure 1.

Referring to Figures 1 and 2 a vehicle body includes a vehicle door 10 with an aperture 12 therein for a window. The aperture 12 has a vertical front edge 14, horizontal top and bottom edges 16, 18, and a sloping rear edge 20. An

upright division bar 22 divides the aperture in two, with one pane of glass 24 forming a quarter light in the substantially triangular rear part 26 of the aperture and a rectangular pane of glass 28 in the rectangular front part 30 of the aperture. The rectangular pane 28 is arranged to slide up and down to open and close the window.

As shown in Figure 3, a pair of seals 40a, 40b extend along the front, upper and lower edges 14, 16, 18 of the square part 30 of the aperture, allowing the sliding pane 28 to slide up and down between them.

As shown in Figure 4, round the rear edge 12 of the aperture, and the parts of the upper and lower edges 16, 18 to the rear of the division bar 22, i.e. the parts of the aperture in which the quarter light is supported, the door 10 has two flanges 32, 34, the quarterlight glass 24 extends into the gap 36 between them, and an extruded elastomeric seal 38 is pressed over the flanges 32, 34 and seals the glass 24 to the door. The seal 38, formed as a single extrusion of elastomeric material having a pair of grooves 38a, 38b on one side which fit over the flanges 32, 34 and a single groove 38c on the opposite side which extends between the pair of grooves 38a, 38b and is arranged to support the quarterlight 24. The front of the quarter light 24 and the rear of the sliding pane 28 are supported by the division bar 22.

As shown in Figure 5, the division bar comprises a strip 42 of elastomeric material having a first channel 44 down one side for supporting the quarter light 24 and a second channel 46 down the other side for supporting the sliding pane 28. A reinforcing metal insert 48 runs through the strip 42. It is U-shaped in cross section and surrounds the base of the first channel 44 so as to support the strip in that region and improve the stiffness and sealing of the joint between the strip 42 and the quarterlight 24.

The division bar 22 is attached to the seal 38 by over-moulding as shown in Figure 5. To form the joint at the bottom end 50 of the division bar one end of the extrusion forming the seal 38, one end of the seals 40a, 40b, and the bottom end of the division bar 22 are inserted into a mould and elastomeric material 52 is injected into the mould so that it joins the division bar to the seals 38, 40a 40b. This results in a joint which is nearly invisible in the finished assembly. The top end of the division bar 22 is attached to the seals 38, 40a, 40b in a similar manner.

In the complete assembly the quarter light 24 and the division bar 22 support each other and together form a structure which is rigid enough for the division bar 22 to provide sufficient support and guiding for the sliding pane 28, as well as a good seal therewith.

When assembling the vehicle the seals 38, 40a, 40b and division bar 22 are moulded together so that the seals 38,

40a, 40b form a complete loop with the division bar extending across it between the two connection points. The front edge of the quarterlight 24 is then inserted into the channel 44 in the division bar 22. The one-piece seal 38 is then stretched over the quarterlight so that its central groove 38c fits over the edge of the qarterlight. since the one-piece seal 38 is formed from elastomeric material with no metal insert it can stretch elastically and can therefore be fitted around the quarterlight easily. The assembly comprising the seals 38, 40a, 40b, the division bar 22 and the quarterlight 24 is then inserted onto the aperture 12 in the vehicle body. This is achieved by placing the quarterlight 24 and division bar 22 in the aperture at an angle to the vertical, rotating them so that division bar is vertical and the quarterlight is inserted between the flanges 32, 34 on the door panels, and then sliding the quarterlight and division bar rearwards into position. The two part seal 40a, 40b can then be fitted and the sliding pane 28 can be assembled into the door by conventional methods.

CLAIMS

1. A method of assembling a window into a vehicle, the method comprising the steps of: providing at least one length of sealing material and a division bar, the sealing material and the division bar each having a groove therein; attaching each end of the division bar to a respective connection point on the sealing material; inserting one edge of a window pane into the groove in the division bar; fitting the groove in the sealing material over the remaining edges of the pane, and mounting the sealing material and pane into a window aperture of a vehicle body.

2. A method according to claim 1 wherein at least a portion of the sealing material between the two connection points is elastically stretchable, and the sealing material is stretched when fitting the groove in the sealing material over said remaining edges of the pane.

3. A method according to claim 1 or claim 2 wherein the sealing material is formed into a complete loop for covering the whole of the edge of the window aperture.

4. A method according to any foregoing claim wherein the sealing material comprises at least two parts of different cross section.

5. A method according to any foregoing claim wherein the dividing means is attached to the sealing material by moulding.

6. A method according to any foregoing claim wherein the sealing material between the two connection points has two grooves therein, the vehicle body around part of the aperture includes two spaced apart body parts, and the method includes the step of fitting each of said two grooves over a respective one of said body parts.

7. A method according to claim 6 wherein the sealing material between the two connection points is arranged to support an edge of the pane between the two body parts.

8. A method of assembling a window into a vehicle substantially as hereinbefore described with reference to the accompanying drawings.

Patent Office

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Application No:	GB 9612808.7	**Examiner:**	John Fulcher
Claims searched:	1-8	**Date of search:**	15 July 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1J(JCH,JCN,JDH,JDN,JGM,JGN,JM); E1R(RRV)

Int Cl (Ed.6): B60J; E06B

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	EP 0380398 A1	(MESNEL)	
A	EP 0145354 A2	(SHELLER-GLOBE)	
A	US 5199761	(DANNECKER ET AL)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.